

What is claimed is:

[0065] 1. A system for monitoring a manufacturing production line, said system comprising:

an artificial neural network (ANN) for recognizing and classifying production yield patterns; and

5 an expert system (ES) coupled to said artificial neural network to provide a knowledge base and apply cognitive heuristics to execute responses based on production yield patterns information received from said artificial neural network.

10 **[0066]** 2. The system of claim 1 wherein said ANN identifies a plurality of yield trends and assigns a weight to at least one of said production yield trends; and wherein said ANN outputs notification for identifying each of said at least one weighted production yield trend having an assigned weight beyond a predetermined yield-degrading threshold value.

15 **[0067]** 3. The system of claim 1, further comprising instructions for training said ANN to assign said weight to each of said production yield trends based on historical case studies.

[0068] 4. The system of claim 1, further comprising instructions for training said ANN to assign said weight to each of said production yield trends based
20 on a base of knowledge.

[0069] 5. The system of claim 1, further comprising instructions to send a report to predetermined individuals.

[0070] 6. The system of claim 1, further comprising instructions to provide an alarm signal.

[0071] 7. The system of claim 1, further comprising instructions to send a pager message to predetermined individuals.

[0072] 8. The system of claim 1, further comprising instructions to adjust the production process in accordance with the knowledge base of the system.

5 **[0073]** 9. A method for system for monitoring a manufacturing production line using an artificial neural network (ANN) coupled to an expert system, said method comprising the steps of:

recognizing a plurality of production yield patterns;

10 classifying at least one of said production yield patterns into at least one production yield trend;

weighting said at least one production yield trend;

providing notification to expert system (ES) when at least one of said weighted trends passes a predetermined yield-degrading threshold value; and

15 executing responses from said expert system (ES) in accordance with said expert systems knowledge base.